

Power Transistor (−60V, −3A)

2SB1184 / 2SB1243

●Features

1) Low $V_{CE(sat)}$.

$$V_{CE(sat)} = -0.5V \text{ (Typ.)}$$

$$(I_C/I_B = -2A / -0.2A)$$

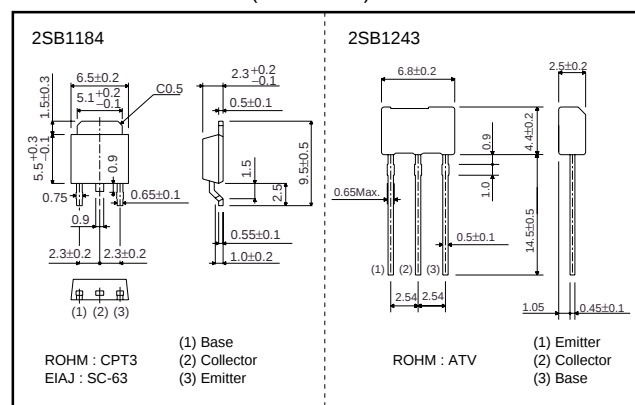
2) Complements the 2SD1760 / 2SD1864.

●Structure

Epitaxial planar type

PNP silicon transistor

●External dimensions (Units : mm)



●Absolute maximum ratings ($T_a=25^\circ\text{C}$)

Parameter	Symbol	Limits	Unit
Collector-base voltage	V_{CBO}	−60	V
Collector-emitter voltage	V_{CEO}	−50	V
Emitter-base voltage	V_{EBO}	−5	V
Collector current	I_C	−3	A (DC)
	I_{CP}	−4.5	A (Pulse) *1
Collector power dissipation	2SB1184	P_C	1
			15
			W ($T_C=25^\circ\text{C}$)
Collector power dissipation	2SB1243	P_C	1
			W *2
Junction temperature	T_j	150	$^\circ\text{C}$
Storage temperature	T_{stg}	−55~+150	$^\circ\text{C}$

*1 Single pulse, $P_w=100\text{ms}$

*2 Printed circuit board, 1.7mm thick, collector copper plating 100mm² or larger.

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●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CBO}	-60	—	—	V	$I_C = -50\mu A$
Collector-emitter breakdown voltage	BV_{CEO}	-50	—	—	V	$I_C = -1mA$
Emitter-base breakdown voltage	BV_{EBO}	-5	—	—	V	$I_E = -50\mu A$
Collector cutoff current	I_{CBO}	—	—	-1	μA	$V_{CB} = -40V$
Emitter cutoff current	I_{EBO}	—	—	-1	μA	$V_{EB} = -4V$
Collector-emitter saturation voltage	$V_{CE(sat)}$	—	—	-1	V	$I_C/I_B = -2A/-0.2A$ *
Base-emitter saturation voltage	$V_{BE(sat)}$	—	—	-1.2	V	$I_C/I_B = -1.5A/-0.15A$ *
DC current transfer ratio	h_{FE}	82	—	390	—	$V_{CE} = -3V, I_C = -0.5A$ *
Transition frequency	f_T	—	70	—	MHz	$V_{CE} = -5V, I_E = 0.5A, f = 30MHz$
Output capacitance	C_{ob}	—	50	—	pF	$V_{CB} = -10V, I_E = 0A, f = 1MHz$

* Measured using pulse current.

●Packaging specifications and h_{FE}

Type	h_{FE}	Package	Taping	
		Code	TL	TV2
		Basic ordering unit (pieces)	2500	2500
2SB1184	PQR		○	—
2SB1243	PQR		—	○

 h_{FE} values are classified as follows :

Item	P	Q	R
h_{FE}	82~180	120~270	180~390

●Electrical characteristic curves

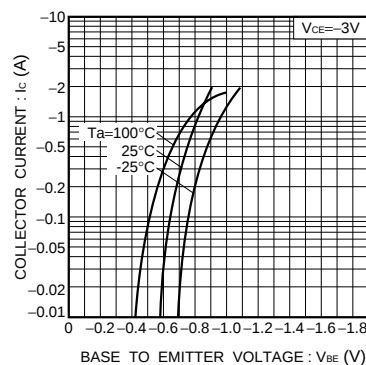


Fig.1 Grounded emitter propagation characteristics

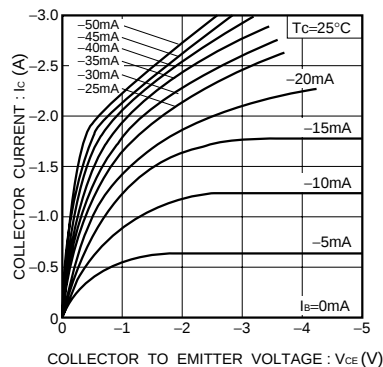


Fig.2 Grounded emitter output characteristics (I)

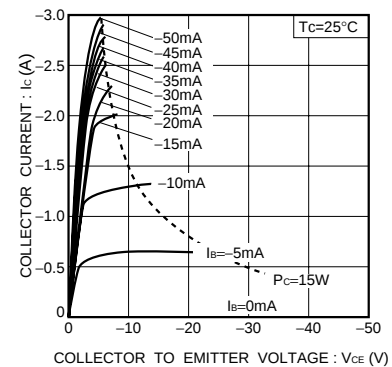


Fig.3 Grounded emitter output characteristics (II)

Transistors

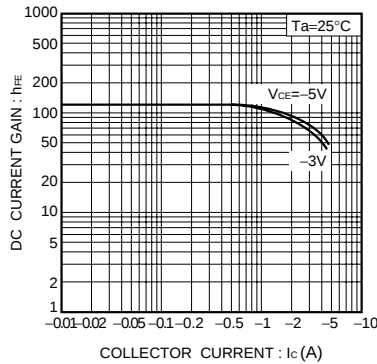


Fig.4 DC current gain vs. collector current (I)

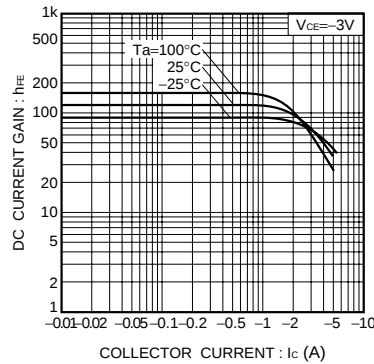


Fig.5 DC current gain vs. collector current (II)

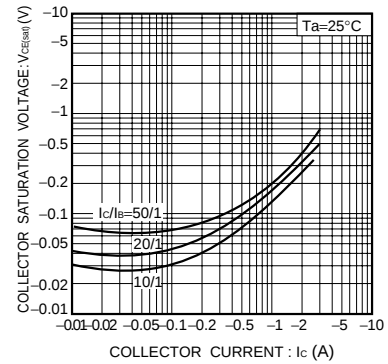


Fig.6 Collector-emitter saturation voltage vs. collector current

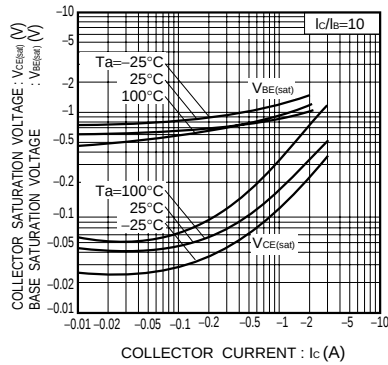
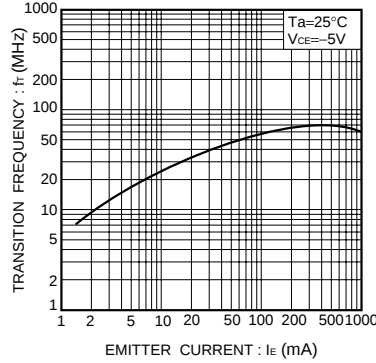
Fig.7 Collector-emitter saturation voltage vs. collector current
Base-emitter saturation voltage vs. collector current

Fig.8 Gain bandwidth product vs. emitter current

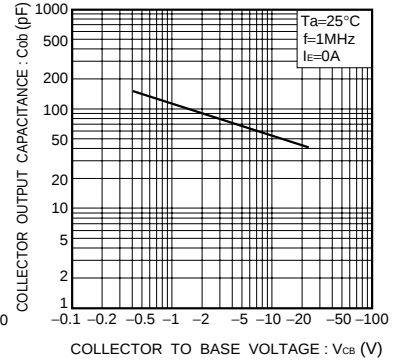


Fig.9 Collector output capacitance vs. collector base voltage

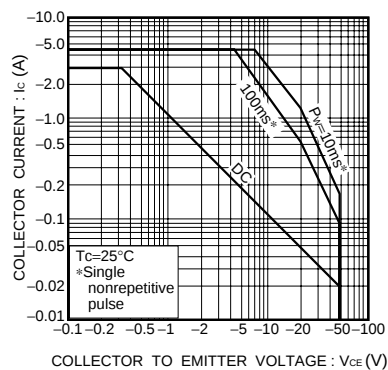


Fig.10 Safe operation area (2SB1184)

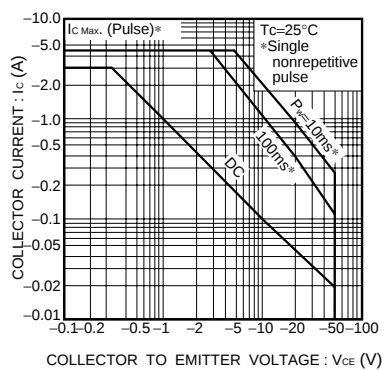


Fig.11 Safe operation area (2SB1243)